

SENT VIA FAX AND U.S. MAIL

March 18, 2010

Mr. Clyde Rhodes  
Chief of Hazardous Waste Division  
Arkansas Department of Environmental Quality  
5301 Northshore Drive  
North Little Rock, AR 72118-5317

Subject: **Comments to the Remedial Action Decision Document (Dated February 2010)  
Former Cedar Chemical Facility (the "Site")  
Helena – West Helena, Arkansas  
EPA ID No. ARD990660649**

Dear Mr. Rhodes:

AECOM has reviewed the *Remedial Action Decision Document* (RADD; dated February 2010) for the former Cedar Chemical Company Site. On behalf of Tyco Fire Products LP, formerly Ansul, Incorporated, formerly Wormald U.S., Inc. ("Wormald"), AECOM submits this letter as a matter of record to document general comments compiled as a result of the RADD review.

AECOM respectfully requests that the Arkansas Department of Environmental Quality (ADEQ) provide clarifications, technical rationale, and references to appropriate technical documents and/or reports of investigations conducted at the Cedar Chemicals Site as justification for certain portions of the RADD as provided in each comment below and/or make corrections as necessary to address the comments identified herein.

Comments:

1. Section 2, page 4, last paragraph. The statement "Due to lack of participation by Ansul..." is incorrect, as stated and should be deleted. Wormald fully participated in and complied with the Consent Administrative Order LIS No. 07-027 (CAO) by executing a Separate Agreement with the ADEQ on January 9, 2009. Wormald was never requested by ADEQ or required by the terms of the CAO to conduct a full site investigation for all contaminants at the Site. With the full knowledge and approval of ADEQ, the requirements of the CAO and the Separate Agreement were satisfied through the completion of the following:
  - *Wormald Site Investigation Work Plan* (AECOM, January 22, 2009),
  - Wormald Site Investigation field work – completed March 4 and 5, 2009,
  - *Wormald Site Investigation Report* (AECOM, originally submitted March 30, 2009; revised June 2, 2009), and
  - *Focused Feasibility Study Report – Site 3* (AECOM, June 29, 2009).

2. Section 3, page 6. ADEQ should reference the author, title and date of the report which is the source of Table 1.
3. Section 4, pages 17 through 19 and Tables 2A and 2B. The first sentence on page 17 states that “The [Facility Investigation] FI findings were used to identify Constituents of Concern (COC) in on-site soil and in on-site and off-site groundwater.” Based on the previous section, which discusses the findings of the 2008 FI (AMEC Geomatrix, February 2009), it appears this section is also referencing the 2008 FI.

The *Feasibility Study (FS) Report* (AMEC Geomatrix, December 2009) was generated based on the FI findings and includes the Center for Toxicology and Environmental Health (CTEH) *Derivation of Human Health (HH) Risk-Based Concentrations (RBCs)*, which is listed as being prepared for the ADEQ, in Appendix A. The *Derivation of HH RBCs* (CTEH, December 2009) provides a description of the methodology used to select COCs for each media and provides a list of COCs for each media in Tables 1, 2, 3A, and 3B for soil, on-site perched zone groundwater, on-site alluvial groundwater, and off-site alluvial groundwater, respectively. However, there are discrepancies between the COCs listed in RADD Table 2A for soils and 2B for groundwater and those listed in the *Derivation of HH RBCs* (CTEH, December 2009). For example, in the *Derivation of HH RBCs*, dinoseb was selected as a COC based on the direct-contact pathway and for on-site soils only, but is included as a COC in the RADD for on-site perched zone groundwater and on-site alluvial groundwater (Table 2B). Other chemicals, such as bis(2-ethylhexyl)phthalate, heptachlor, and methoxychlor, are also selected as COCs for perched zone groundwater in Table 2B of the RADD, although they were not retained as COCs in the *Derivation of HH RBCs*. Furthermore, chemicals, such as chloroethane and 1,3-dichlorobenzene, were selected as COCs for on-site alluvial aquifer groundwater in the *Derivation of HH RBCs* but were not included as COCs in Table 2B of the RADD. The rationale for these changes and/or variations in COCs between these documents is not provided and leads to confusion.

AECOM recommends that the COCs presented in tables 1, 2, 3A, and 3B of the *Derivation of HH RBCs* (CTEH, December 2009) be adopted for the purpose of the RADD and that corrections be made to ensure COCs are appropriately matched to media at the Site. Alternately, ADEQ should (a) provide detailed scientific and technical rationale supporting the decision to include the COCs identified in Tables 2A and 2B of the RADD rather than those identified in the *Derivation of HH RBCs* (CTEH, December 2009); (b) provide reference(s), with document name and page number, for the investigative document(s) or report(s) which are the source(s) for Tables 2A and 2B; and (c) provide references for all scientific literature, investigative reports, and findings upon which ADEQ relied to identify the COCs in Tables 2A and 2B in the RADD.

4. Section 6, page 20, Table 3A. The list of remedial alternatives considered for on-site soils lists “no further action” as the only remedy considered for Site 3 soils and appears to reference the *Focused FS Report - Site 3* (AECOM, June 2009). This phrase is incorrect and should be deleted. As a point of clarification, the referenced report addressed residual concentrations of dinoseb in Site 3 soils exclusively, with the acknowledgement and approval of ADEQ, and the remedies discussed therein were only considered with respect to dinoseb concentrations – they did not consider other COCs that may potentially be present in soil at Site 3 or anywhere else on or on-site or in groundwater. As such, application of the findings of the *Focused FS Report - Site 3* (AECOM, June 2009) to other COCs or media in the RADD is inappropriate. Moreover, the *Focused FS Report - Site 3* evaluated multiple remedies, including no further action, institutional controls (exposure controls), institutional

controls with down-gradient groundwater monitoring, and an engineered barrier with institutional controls and down-gradient groundwater monitoring, before recommending institutional controls as the preferred remedial alternative for residual dinoseb concentrations in subsurface soil at Site 3.

As a standalone entity in Table 3A of the RADD, this table should be corrected to accurately reflect the three alternatives that were considered for residual dinoseb in soil at Site 3. At a minimum, the table should be corrected to accurately reflect the alternative that was presented in the conclusion of the *Focused FS Report - Site 3* for residual dinoseb in soil - Institutional Controls.

5. Section 7, page 22, first paragraph. This statement “no action” inaccurately reflects the recommendation made in the conclusions of the *Focused FS Report – Site 3* (AECOM, June 2009). Please see previous comment for additional information regarding the findings of the Site 3 FS. This statement should be revised to reflect the recommendation of “Institutional Controls” as the preferred remedy for residual dinoseb concentrations in soil at Site 3. Furthermore, the statement should specify that the AECOM recommendations are applicable to residual concentrations of dinoseb in subsurface soils only, and do not consider other constituents that may be present in soil at Site 3 or in other areas of the Site.
6. Section 8, page 25, last paragraph, first bullet and Section 10, page 34, paragraph 3. It is unclear why the remediation area identified for soil stabilization in Figure 8B has been expanded by ADEQ in the RADD from the *FS Report* (AMEC Geomatrix, December 2009) and why dinoseb has been identified as the reason for expanding the remediation area for the remedies described in the RADD. Dinoseb was selected as a COC for on-site soils in the *FS Report* (AMEC Geomatrix, December 2009) and in the RADD based solely on the direct contact exposure pathway. Exposure controls, such as deed restrictions to secure the facility area, to limit future land use to the industrial scenario, and to restrict intrusive activities and/or to require the use of personal protective equipment (PPE) during intrusive activities, should be sufficient to control exposure to dinoseb and the identified direct contact risk. There does not appear to be any justification provided for expansion of the area identified for soil stabilization or an explanation for why dinoseb is the reason for the expansion.

AECOM requests that this point be clarified by ADEQ to explain in detail the scientific and technical justification and rationale behind this decision to expand the remediation area due to dinoseb, and provide the appropriate scientific literature, investigative documents, and/or reports relied upon by ADEQ for this decision. AECOM recommends that the expansion of the area and/or the reference to dinoseb as the reason for expanding the area for soil stabilization be removed from the RADD.

7. Section 8, page 25 and Section 10, page 34. Soil remedy alternatives address on-site soils as a whole and do not differentiate between remedies designed to address a particular exposure pathway (i.e., direct exposure pathway vs. vapor intrusion pathway). The COCs identified for each pathway exhibit very different physical properties and, as such, the selected remedies are not necessarily applicable or appropriate for all contaminants/pathways. For instance, soil vapor extraction may address the vapor intrusion pathway for 1,2-DCA, but would not be necessary to implement to address those constituents, such as dinoseb, which are only identified for potential exposure via the direct contact pathway. Institutional controls (i.e., land use controls, deed restrictions, and site security measures) should be sufficient on their own to control direct contact exposure to dinoseb in on-site soils.

AECOM requests that the ADEQ amend the RADD to include a list of COCs and exposure pathways addressed by each proposed remedy.

8. Section 8, page 28, Table 4D. The basis for the recommendation to remove all above-ground structures is unclear. The recommendation does not appear to be based on controlling exposure risk, since no COCs or exposure pathways are identified for the remaining structures. Furthermore, all columns of the table are blank except for “capital cost”, so the remedy does not appear to have been evaluated with respect to the criteria outlined on page 25, paragraph 1. The January 2003 USEPA Region 6 removal action addressed “chemicals left at the Facility in tanks and containers” as discussed on page 3, paragraphs 6 and 7 of the RADD.

Based on this information, we do not believe there is enough information to justify razing all above-ground structures. ADEQ should consider that if particular above-ground structures need to be razed to implement selected remedies, as discussed on page 36, paragraph 2 of the RADD, the demolition could be implemented on a case-by-case basis for a lower cost. ADEQ should provide its scientific reasons and rationale for the necessity to remove all above ground structures when there is at least one viable buyer for the facility, Harcros Chemical, who has need to use at least some of the on-site structures, and removing the structures will eliminate the purchase or lease of the facility to any potential industry who may make use of the facility, redevelop the facility, and offer jobs to the community.

9. Section 9, pages 30 through 33, Tables 5A through 5E. The RADD does not reference the source of the Remedial Action Levels (RALs) for the COCs for Site media presented in Tables 5A through 5E. The RALs for COCs in on-site soils appear to be in agreement with those presented in Table 4 of the *Derivation of HH RBCs* (CTEH, December 2009) for most COCs; however, the Direct Contact RBC for 1,2-DCA presented in Table 5A of the RADD (22 mg/kg) is double the value presented in Table 4 of the *Derivation of HH RBCs* (CTEH, December 2009). With the exception of the Vapor Intrusion RBCs presented in Table 5C of the RADD, which appear to correspond with the values presented in Table 5 of the *Derivation of HH RBCs* (CTEH, December 2009), and the Maximum Contaminant Levels presented in Tables 5C through 5E, there is no explanation as to the methodologies or references used to determine the remaining RALs in Tables 5A through 5E. Furthermore, it is unclear if the RBCs presented in these tables are site-specific calculated values or regional screening levels. AECOM requests that the ADEQ amend the RADD to add (a) an explanation of the rationale for selection of the RALs in Tables 5A through 5E; (b) the methodologies used for calculation site-specific RALs (if applicable); and (c) references to technical guidance, standards, or reports used to generate the RALs.
10. Section 9, page 31, last paragraph and page 32, Table 5C. It is unclear why maximum contaminant levels (MCLs), residential tap water RBCs, and industrial tap water RBCs are included in Table 5C as RALs for COCs in on-site perched zone groundwater. As stated in the correspondence from AMEC Geomatrix to ADEQ on October 14, 2009 entitled *Response to Comments on the FS Report for Cedar Chemical Corporation* (Email Date of September 10, 2009), “the Perched Zone yields insufficient water to be used as a potable or industrial water supply” (page 2, first paragraph). As such, drinking water standards and tap water risk-based criteria are not applicable to the intermittent perched zone groundwater in this area.

Considerations for current land use and groundwater use designation are included in the *Ground Water Remediation Level Interim Policy and Technical Guidance* (ADEQ, July 12, 2005), available

via a link from the ADEQ Hazardous Waste Division website (<http://www.adeg.state.ar.us/hazwaste/default.htm>), and the USEPA Region 6 Corrective Action Strategy (CAS; November, 2008), available via a link from the ADEQ Hazardous Waste Division- Arkansas Corrective Action Strategy website ([http://www.adeg.state.ar.us/hazwaste/branch\\_tech/cas.htm](http://www.adeg.state.ar.us/hazwaste/branch_tech/cas.htm)). Page 2, paragraph 4 and page 4, Section III (c) of the *Ground Water Remediation Level Interim Policy and Technical Guidance* (ADEQ, July 12, 2005) state that "Consideration will be given to the current and reasonably anticipated future land use (including ground water usage)" when establishing goals for groundwater remediation. Page 6, paragraph 2 of the guidance states that "in cases where the designated use differs from the actual or reasonably anticipated use; the remediation standard may be based on an acceptable risk range. The acceptable risk range shall be based on protection of human health and the environment." The USEPA Region 6 CAS (November 2008) states that "current land use conditions should be emphasized when evaluating exposures at commercial/industrial facilities because for most of these facilities, current land use is assumed to continue into the foreseeable future" (page 51). The use of MCLs as the RALs for on-site perched zone groundwater does not appear to take these considerations into account. Current land use is industrial and no perched zone or alluvial aquifer drinking water wells exist within the Site. Institutional controls is a reasonable remedy to be put in place within the Facility boundaries to limit certain land-use scenarios, to restrict perched zone groundwater use within the Facility boundary, and/or to require PPE for intrusive activities, thus mitigating the risk of incidental exposure through the direct-contact scenario.

AECOM recommends that (a) institutional controls (e.g., deed restrictions) be put in place within the Facility boundary to prohibit the installation of groundwater wells in the perched zone; and (b) remedial actions levels for non-volatile compounds in perched zone groundwater should be based on the risk of incidental exposure to potential future construction workers through the direct-contact exposure pathway. Furthermore, institutional controls and long-term monitoring should be sufficient to mitigate risks for chemicals, such as dinoseb, identified as COCs for the perched zone that (a) have not been identified as COCs in off-site groundwater and (b) exhibit declining concentration trends. For perched zone and on-site alluvial aquifer COCs that meet these criteria, a limited remedy, which couples institutional controls to restrict groundwater use and to limit exposure and long-term monitoring to verify that concentration trends continue to decline and migration does not occur, should be included in the RADD.

ADEQ should provide its rationale for not accepting these recommendations and consider this information before the RADD is finalized.

11. Section 10, page 34: ADEQ should provide its scientific and technical rationale and reference to the appropriate scientific literature and/or reports as to (a) why it did not adopt the conclusions and remedies presented in the *Comprehensive Site Assessment* (ADEQ, April 2004) for SWMUS 63-73 and AOC 1 rather than the remedies provided in the RADD (ADEQ, February 2010) for those areas ; and (b) why it did not adopt the conclusions and remedies proposed in the *FS Report* (AMEC Geomatrix, December 2009) and the *Focused FS Report – Site 3* (AECOM, June 2009) for SWMUS 63-73 and AOC 1 rather than those provided in the RADD.
12. Section 10, page 34 through 36. The RADD does not specify a schedule for implementation or specify whether or not a phased approach has been considered for the Site. For chemicals that have been identified as COCs due to potential risk via the direct-contact pathway for on-site soils, institutional controls (e.g., deed restrictions, land use restriction, PPE-requirements for intrusive activities) and exposure controls (i.e., low-permeability cover) should be sufficient to mitigate the

risk. Hot spots could be treated with in-situ stabilization and/or soil vapor extraction (SVE), as applicable for the specific COC, to reduce residual source material for COCs identified for the soil-groundwater exposure pathway. For COCs identified in on-site media, a phased approach using these components could be implemented and long-term groundwater monitoring/monitored natural attenuation (MNA) could be used to monitor the remedies for their effectiveness in reducing on-site groundwater concentrations. If these low-cost remedies were sufficient in reducing concentrations, a more aggressive and more expensive approach would not be needed. Furthermore, additional monitoring data collected during the initial phase could be useful in the design phase if a more aggressive approach was needed.

AECOM requests that the ADEQ include a schedule for how the remedies will be implemented in the final RADD. Furthermore, AECOM requests that ADEQ consider a phased approach for COCs in on-site media when developing the final RADD.

13. General comment. It is our understanding that there is a potential buyer for the Site, Harcros, who intends to use the Site for industrial use and ADEQ is currently negotiating with Harcros for it to acquire the Site. The USEPA Region 6 CAS (November 2008), which is available via a link from the ADEQ Hazardous Waste Division- Arkansas Corrective Action Strategy website ([http://www.adeq.state.ar.us/hazwaste/branch\\_tech/cas.htm](http://www.adeq.state.ar.us/hazwaste/branch_tech/cas.htm)), states that “under the CAS screening process, the receptors for the commercial/industrial scenario are limited to generic on-site worker (indoor worker and outdoor worker). There is no requirement under this land use category to evaluate exposure to members of the public” (page 52). Page 53 of the CAS states that the “EPA prefers to rely on states to develop ground water use designations and will generally defer to a state’s designation of groundwater classification and use when developing cleanup objectives”. Page 54 of the CAS states that “if an aquifer is not a drinking water resource, does not have any other beneficial resource attributes, does not impact indoor air, does not contaminate surface water, or does not contaminate a drinking water aquifer, then the level of protection (e.g., MCL or alternate concentration limit (ACL)) to be met at, within, or beyond the facility boundary will be determined in consultation with the administrative authority.” Finally, page 11 and Appendix A, page 9 of the CAS state that “For instances where groundwater is not a drinking water source, is not a beneficial resource, or in instances in which restoration is not practical, the expectation is that human health and the environment must be protected at the point of exposure (POE). If a state does not consider groundwater beneath a facility to be a beneficial resource, the POE may be placed at the facility boundary.” The CAS provides scenarios for placing the POE at the facility boundary and beyond the facility boundary (Appendix A, page 11): “In Figure A-4 the POE is determined to be at the facility boundary (where land use is industrial), offsite land use beyond the boundary is residential” and “Figure A-6 describes the case where groundwater is not a beneficial resource and both onsite and offsite properties are classified as industrial.”

Based on the information provided in the USEPA Region 6 CAS (November 2008), AECOM respectfully requests that either the ADEQ (a) amends the RALs to RBCs for on-site perched zone and on-site alluvial aquifer groundwater in the final RADD and shifts the POE (and applicability of MCLs) to the Site boundary or beyond, or (b) provides a detailed rationale and technical explanation for using MCLs as the RALs for on-site groundwater in the final RADD.

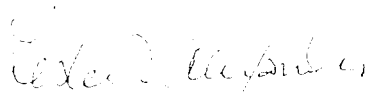
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If you have any questions or require additional information, please contact me at (864) 234-2282 or via email at [leslee.alexander@aecom.com](mailto:leslee.alexander@aecom.com) or Ms. Ann Faitz, Tyco Counsel, at (501) 831-5637. Please put the following Tyco contacts on the ADEQ mailing list for this RADD, including myself:

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Sincerely,

**AECOM**



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Project File 104336

*104336\ADMIN\RADD\AECOM Draft Comments on Feb 2010 RADD\_Rev02.doc*